S/N Unknown PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Edmond J. LaVoie et al.

Examiner:

Kahsay Habte

Serial No.:

Unknown Herewith Group Art Unit: Docket:

Unknown 735.038US2

Filed: Title:

HETEROCYCLIC TOPOISOMERASE POISONS

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the enclosed materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 19-0743 in order to have this Information Disclosure Statement considered.

Pursuant to 37 C.F.R. §1.98(d), copies of the listed documents are not provided as these references were previously cited by or submitted to the U.S. Patent Office in connection with Applicants' prior U.S. application, Serial No. 09/869141, filed on June 13, 2001, which is relied upon for an earlier filing date under 35 U.S.C. §120.

Title: HETEROCYCLIC TOPOISOMERASE POISONS

Page 2 Dkt: 735.038US2

The Examiner is invited to contact the Applicants' Representative at the below-listed telephone number if there are any questions regarding this communication.

Respectfully submitted,

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By their Representatives,

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This paper or fee is being deposited on the date indicated above with the United States Postal Service pursuant to 37 CFR 1.10, and is addressed to the Assistant Commissioner for Patents, Attn: MAIL STOP PATENT APPLICATION, P.O. Box 1450, Alexandria, VA 22313-1450.

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STATEMENT BY APPLICANT (Use as many sheets as necessary)	Application Number	Unknown		
	Filing Date	Even Date Herewith		
	First Named Inventor	LaVoie, Edmond		
	Group Art Unit	Unknown		
	Examiner Name	Habte, Kahsay		
Sheet 1 of 4	Attorney Docket No: 735.038US2			

	US PATENT DOCUMENTS						
Examiner Initial *	USP Document Number	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	Filing Date If Appropriate	
	US-26,065	07/19/1966	Marvel, C. S., et al.	260	47	11/28/1965	
	US-2,985,661	05/23/1961	Hien, D. W., et al.	260	309	02/09/1956	
	US-3,449,330	06/10/1969	Guglielmetti, L., et al.	260	240	08/16/1965	
	US-3,538,097	11/03/1970	Lowe, H., et al.	260	268	03/23/1967	
	US-5,106,863	04/21/1992	Hajos, Z. G., et al.	514	395	03/26/1990	
	US-5,112,532	05/12/1992	Ninomiya, H., et al.	252	587	07/24/1989	
	US-5,767,142	06/16/1998	La Voie, E. J., et al.	514	394	03/20/1996	
	US-5,770,617	06/23/1998	LaVoie, , et al.	514	394	01/21/1997	
	US-5,807,874	09/15/1998	LaVoie, E. J., et al.	514	338	05/17/1995	

	FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Foreign Document No	Publication Date	Name of Patentee or Applicant of cited Document	Class	Subclass	T ²		
	RU-1530628	12/23/1989		C07 D	235/20			
	WO-96/36612	11/21/1996	LaVoie, Edmond J., et al.	C07 D	235/18			
	WO-98/31673	07/23/1998	LaVoie, Edmond J., et al.	C07 D	235/18			

	OTHER	R DOCUMENTS NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		International PCT Search Report for PCT/US 98/01005, (06/22/98),5 pgs	
		BATHINI, YADAGIRI, et al., "Convenient Routes to Substituted Benzimidazoles	
		and Imidazolo[4,5-b]pyridines Using Nitrobenzene as Oxidant", Synthetic	
		Communications, 20 (7), (1990),pp. 955-963	
		CHEN, ALLAN Y., et al., "A New Mammalian DNA Topoisomerase I Poison	
		Hoechst 33342: Cytoxicity and Drug Resistance in Human Cell Cultures",	
		Cancer Research, 53 (6), (March 15, 1993),pp. 1332-1337	
1		CHEN, ALLAN Y., et al., "DNA Minor Groove-Binding Ligands: A Different Class	
		of Mammalian DNA Topoisomerase I Inhibitors", Proc. Natl. Acad. Sci., USA, 90, (Sept. 1993),pp. 8131-8135	
		CHEN, ALLAN Y., et al., "DNA Topoisomerases: Essential Enzymes and Lethal	
		Targets", Annu. Rev. Pharmacol. Toxicol., 34, (1994),pp. 191-218	
		GOLDMAN, GUSTAVO H., et al., "Differential poisoning of humand and	
		aspergilus nidulans DNA topoisomerase I by Bi- and Terbenzimidazoles",	
		Biochemistry, 36 (21), (1997),pp. 6488-6494	
		KIM, J. S., et al., "Influence of steric factors on topoisomerase I inhibition and	
L		cytotoxicity of bisbenzimidazoles related to Hoechst 33342", Proceedings of the	

EXAMINER

DATE CONSIDERED

PTC/SB/084(10-01)
Approved for use through 10/31/2002. OMB 651-0031
US Patent & Trademark Office: U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)	Application Number	Unknown	
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	First Named Invent r	LaVoie, Edmond	
	Group Art Unit	Unknown	
	Examiner Name Habte, Kahsay		
Sheet 2 of 4	Attorney Docket No: 7	735.038US2	

	OTHE	R DOCUMENTS NON PATENT LITERATURE DOCUMENTS	
Examiner Initlals*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		86th Annual Meeting of the American Association for Cancer Research, 36,	
		Abstract No. 2689, Toronto, Ontario, Canada,(March 1995),p. 451	ļ
		KIM, J. S., et al., "Influence of steric factors on topoisomerase I inhibition and cytotoxicity of bisbenzimidazoles related to Hoechst 33342", Abstract 7 - Proceedings of the 3rd Annual Scientific Retreat of the Cancer Institute of New	
		Jersey, Princeton Marrtott Forrestal Village,(1995),p. 28	
		KIM, JUNG S., et al., "Quantitative structure-activity relationships on 5-	
		substituted terbenzimidazoles as topoisomerase I poisons and antitumor	ļ
		agents", Bioorg. Med. Chem., 6 (2), (1998),pp. 163-172	
		KIM, J. S., et al., "Steric factors associated with the topoisomerase I inhibition	
		and cytotoxicity of substituted bisbenzimidazoles", Abstract 10- Proceedings of	
		the American Association of Pharmaceutical Scientists Eastern Regional	
		Meeting, (1995),p. 27	
		KIM, JUNG S., et al., "Structure-activity Relationships of Benzimidazoles and	
		Related Heterocycles as Topoisomerase I Poisons", Bioorganic & Med. Chem.,	
		4. (1996),pp. 621-630	
		KIM, JUNG S., et al., "Substituted 2,5'-Bi-1H-benzimidazoles: Topoisomerase I	
		Inhibition and Cytotoxicity", J. Med. Chem., 39, (1996),pp. 992-998	
		KIM, JUNG S., et al., "Terbenzimidazoles: influence of 2"-, 4-, and 5-	
		substituents on cytotoxicity and relative potency as topoisomerase I poisons", <u>J.</u>	
		Med. Chem., 40, (1997),pp. 2818-2824	
		LAVOIE, E. J., et al., "Structure-activity studies related to minor groove-binding	
		ligands which inhibit mammalian DNA topoisomerase I", Abstract 1 -	
		Proceedings of the 85th Annual Meeting of American Association for Cancer	Ì
		Research, San Francisco, CA,(April 1994),p. 2699	
		LOEWE, H., et al., "Basic substituted 2, 6-bisbenzimidazole derivatives, a novel	
		series of substances with chemotherapeutic activity", Chemical Abstracts, 82	1
		(17), Abstract No. 112032,(April 28, 1975),1 p.	ļ
		PILCH, DANIEL S., et al., "A terbenzimidazole that preferentially binds and	i
		conformationally alters structurally distinct DNA duplex domains: a potential	1
		mechanism for topoisomerase I poisoning", <u>Proc. Nat'l. Acad. Sci., USA, 94,</u>	
_	ļ	(Dec. 1997),pp. 13565-13570	
		PILCH, DANIEL S., et al., "Biophysical Characterization of a Cytotoxic,	
	1	Topoisomerase I Poison", Abstract 8 - Proceedings of the 3rd Annual Scientific	
		Retreat of the Cancer Institute of New Jersey, Princeton Marriott Forrestal	
		Village, Princeton, NJ,(June 1, 1995),p. 3	
		PILCH, DANIEL S., et al., "Characterizing the DNA binding modes of a	
		topoisomerase I-poisoning terbenzimidazole: evidence for both intercalative and minor groove binding properties", <u>Drug Design and Discovery</u> , 13, (1996),pp.	
		minor groove binding properties", <u>Drug Design and Discovery, 13.</u> (1996),pp. 115-133	
		PORAI-KOSHITS, B. A., et al., "Imidazole derivatives. Synthesis of some	<u> </u>
	L	FORMINOSI II 3, B. A., et al., illiluazole delivatives. Syllilesis di sollie	I

EXAMINER DATE CONSIDERED

PTO/SB/08A(10.01)
Approved for use through 10/31/2002. OMB 651-0031
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Substitute for form 1449A/PTO	Complete if Known		
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	First Named Inventor	LaVoie, Edmond	
	Group Art Unit	Unknown	
	Examiner Name	Habte, Kahsay	
Sheet 3 of 4	Attorney Docket No: 7	735.038US2	

	OTHE	R DOCUMENTS NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No 1	Include name of the author (In CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		polybenzimidazoles", Zhur. Obshchei Khim, 23, As related in Chemical	
		Abstracts, 48 (1954) Col. 4523,(1953),pp. 835-41	
		SINGH, MALVINDER P., et al., "Synthesis and Sequence-Specific DNA Binding	
		of a Topoisomerase Inhibitory Analog of Hoechst 33258 Designed for Altered	
		Base and Sequence Recognition", Chem. Res. Toxicol., 5, (1992),pp. 597-607	
		SUN, et al., <u>Chemical Abstracts, 123 (15)</u> , Abstract No. 198740r,(1995),1 p.	
		SUN, QUN, et al., "Structure activity of novel topoisomerase I inhibitors related	
		to Hoechst 33342", Abstract 6 - Proceedings of the American Association of	
		Pharmaceutical Scientists Eastern Regional Meeting, Hyatt Regency Hotel, New	
		Brunswick, NJ,(June 5-6, 1995),p. 25	
		SUN, QUN, et al., "Structure Activity of Topoisomerase I Poisons related to	
		Hoechst 33342", Bioorganic & Medicinal Chemistry Letters, Vol. 4, No. 24 Vol.	
		4, No. 24,(1994),pp. 2871-2876	
		SUN, QUN, et al., "Structure-activity studies related to minor groove-binding	
		ligands which inhibit mammalian DNA topoisomerase I", Cancer Institute of New	
		<u>Jersey's First Annual Scientific Retreat, Abstract 2, Princeton Marriott Forrestal</u> Village, Princeton, NJ,(June 7, 1994),p. 66	
		SUN, SUN, et al., "Synthesis and Evaluation of Terbenzimidazoles as	
		Topoisomerase I Inhibitors", <u>J. Med. Chem, 38,</u> (1995),pp. 3638-3644	
··· · · · · · · · · · · · · · · · · ·		SUN, QUN , et al., "Synthesis and Evaluation of Terbenzimidazoles as	
		Topoisomerase I Inhibitors", Chemical Abstracts, 123 (15), Abstract	
		No.198740r,(1995),p. 1241	
		SUN, Q., et al., "Synthesis and Pharmacological Evaluation of a Series of Novel	<u> </u>
		DNA Topoisomerase I Inhibitors as Antitumor Agents", Scientific Proceedings of	•
		86th Annual Meeting of the American Association for Cancer Research, Abstract	
		3, Toronto, Canada,(Mar. 18-22, 1995),1 p.	
-		SUN, QUN, et al., "Synthesis and pharmacological evaluation of a series of	_
		novel DNA topoisomerase I inhibitors as antitumor agents", Proceedings of the	
		86th Annual Meeting of the American Association for Cancer Research, Toronto,	
		Ontario, Canada,(1995),p. 2688	
		SUN, QUN, et al., "Synthesis and pharmacological evaluation of a series of	
		novel DNA topoisomerase I inhibitors as antitumor agents", Abstract 5 -	
		Proceedings of the 3rd Annual Scientific Retreat of the Cancer Institute of New	
		Jersey, Princeton Marriott Forrestal Village, Princeton, NJ,(1995),p. 27	_
		SUN, QUN, et al., "Synthesis of Benzimidazo[2,1-a]isoquinolines and 5,6-	
		Dihydrobenzimidazo[2,1-a]isoquinolines", Syn. Lett., submitted, Paper No.	
		7,(1995),6 p.	<u> </u>
		VINOGRADOV, A. E., et al., "Some properties of new DNA specific	}
		bisbenzimidazole fluorochromes without a piperazine ring", <u>Biotechnic &</u>	
		Histochemistry, 38 (5), (1993),pp. 265-269	
		YADAGIRI, BATHINI, et al., "Convenient Routes to Substituted Benzimidazoles	<u> </u>

EXAMINER DATE CONSIDERED

PTO/SB/08A(10-01)
Approved for use through 10/31/2002. OMB 551-0031
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		and Imidazolo[4,5-b]Pyridines Using Nitrobenzene as Oxidant", Synthetic Communications, 20 (7), (1990),pp. 955-963	